SYTINSKAYA, N.N.; SHARONOV, V.V., otvetstvennyy redaktor; IMSHENETSKIY, Yu.K., redaktor izdatel'stva; ZENDEL', M.Ye., tekhnicheskiy redaktor

[Instructions for observations of the moon and lunar eclipses; with a supplement of special instructions for the observation of lunar eclipses, formulated by the Committee on Planetary Physics of the Astronomical Council of the Academy of Sciences of the U.S.S.R.] Instruktsiia dlia nabliudenii Luny i lunnykh zatmenii; s prilozheniem spetsial'nykh instruktsii po nabliudeniiu lunnykh zatmenii, razrabotannykh Komissiei po fizike planet Astronomicheskogo soveta AN SSSR. Sost. N.N.Sytinskaia. Moskva, Izd-vo Akademii nauk SSSR, 1956. 29 p. (MLRA 9:7)

1. Vsesoyuznoye astronomo-geodezicheskoye obshchestvo. (Moon--Observations)

VAUCOULEURS, Gerard de, 1918-; RYABOV, Yu.A.[translator]; SHARONOV, V.V., redaktor

[Physics of the planet Mars; an introduction to areophysics. Translated from the French] Fizika planety Mars; vvedenie v areofiziku. Perevod s frantsuzskogo IU. A. Riabova. Pod red. V.V. Sharonova. Moskva, Izd-vo inostrannoy lit-ry, 1956. 350 p. (MLRA 10:4)

(Mars (Planet))

SHARONOV, V.V.

Conference on the physics of the moon and planets. Vest. Len. un. 11 no.13:151-152 '56. (MLRA 9:10)

(Astrophysics--Congresses)

SHARONOV, V.

Color differences on the lunar surface. Astron.tsir.no.166:9-11 Ja '56. (MLRA 9:7)

1.Astronomicheskaya observatoriya Leningradskogo universiteta.
(Moon--Surface)

SHARONOV, V.

Visual determination of the integral luminosity of the solar corona of June 30, 1954. Astron.tsirk. no.170:4-5 '56. (MLRA 9:10)

1.Astronomicheskaya observatoriya Leningradskogo Universiteta.
(Sun--Corona)

SHARONOV, V.V.

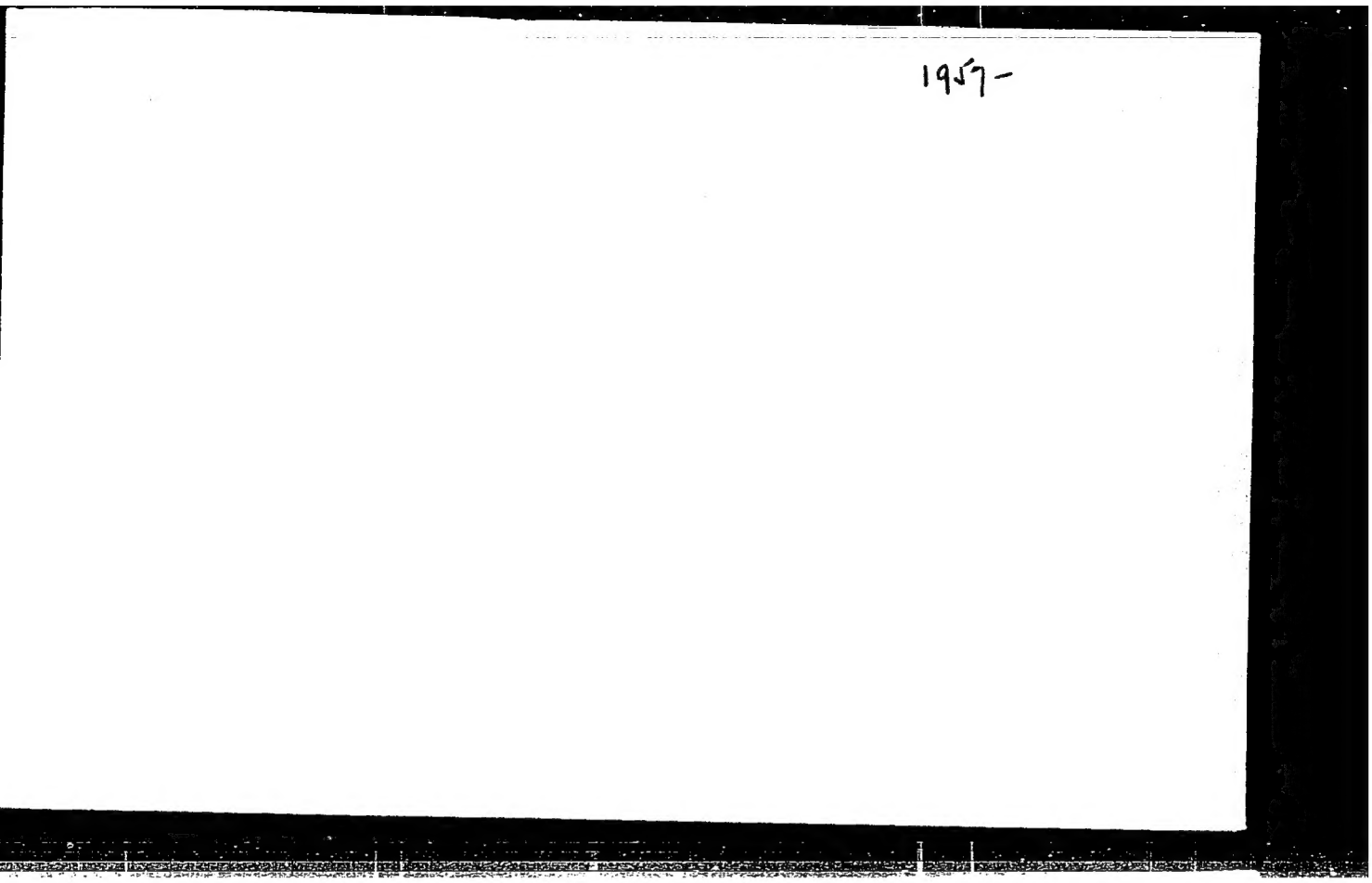
Anomalies of Mars atmosphere during the opposition of 1956.
Astron.tsirk. no.174:9 N '56. (MIRA 10:3)

1. Astronomicheskaya Observatoriya Leningradskogo universiteta.
(Mars (Planet)--Opposition, 1956)

SHARONOV, V.V.

Visual colorimetry of Venus in westward elongation in 1956.
Astron.tsirk. no.174:10-11 N '56. (MLRA 10:3)

1. Astronomicheskaya Observatoriya Leningradskogo universiteta.
(Venus (Planet))



Sharonov, V.V

SHARONOV, V.V.

Session of the Commission for Physiological Optics. Biofizika 2 no.3:399-400 '57. (MIRA 10:8)
(OPTICS, PHYSIOLOGICAL)

SHARONOV, V.V.

In memory of Vladimir Aleksandrovich Faas. Zhur.nauch.i prikl.fot.i kin. 2 no.6:471-473 N-D '57. (MIRA 10:12)
(Faas, Vladimir Aleksandrovich, 1904-1942)

SHARONOV, V.V.

Observations of noctiluscent clouds during the International Geophysical Year. Vest. LGU no.19:184-186 '57. (MIRA 11:1)
(Clouds)

SHARONOV, V. V.

33-4-5/17

AUTHOR: Sharonov, V. V.

TITLE: On the Role of the True Absorption in the Atmosphere of Mars. (K voprosu o roli istinnogo pogloshcheniya v atmosfere Marsa).

PERIODICAL: Astronomicheskiy Zhurnal, 1957, Vol.34, No.4, pp.557-567 (USSR)

ABSTRACT: According to some workers an absorbing layer with a variable optical thickness exists in Mars' atmosphere. Condensations in this atmosphere form luminous clouds which are observable in violet photographs. This view is not supported by evidence since in any structural form of the atmosphere the condensations in the most absorbing layer can appear on the disc only as dark and not luminous spots. Another view is that the absorption predominates over scattering in the Martian atmosphere and increases towards the ultra-violet end of the spectrum. In the case of a single-layer atmosphere having a small optical thickness this view cannot be made to agree with the observed distribution of brightness down the radius of the disc since in this structural form of the atmosphere the darkening near the edge of the disc should increase from the red end of the spectrum towards the violet while in

Card 1/3

...e to ...
...ring material with
...s. The main argument put
...s of the violet layer is
...one layer is supported by the marked
...the screening action of the Martian

Car

SHARONO, V.

Program for physical observations of Mercury's transit across the face of the sun on May 6, 1957. Astron. tsir. no.177:3 F '57. (Mercury (Planet), Transit of) (MIRA 10:6)

SHARONOV, V.

Program of physical observations of the transit of Mercury across the sun's disk on May 6, 1957. Astron.tsir. no.178:9 Mr '57. (MLRA 10:9)

(Mercury (Planet), Transit of)

SHARONOV, V.

General picture of the lunar eclipse of May 13-14, 1957, as observed in Odessa. Astron. tsir. no.183:4-6 Jl '57. (MIRA 11:3)

1. Astronomicheskaya observatoriya Leningradskogo universiteta.
(Eclipses, Lunar--1957)

SHARONOV, V.

Visual-colorimetric determination of the color of seas on Mars.
Astron. tsir. no.183:6-7 Jl '57. (MIRA 11:3)

1. Astronomicheskaya observatoriya Leningradskogo universiteta.
(Mars (Planet))

SHARONOV, V.V.

RADLOVA, L.N.; SHARONOV, V.V.

Photometric observations of the lunar eclipse of May 13-14, 1957.
Astron.tsir. no.184:11-12 S '57. (MIRA 11:4)
(Eclipses, Lunar--1957)

SHARONOV, V. V.

Preliminary results of visual photometry and colorimetry of Mars during the opposition of 1956. Astron. tsir. no.187:12-14 D '57. (MIRA 11:6)

1. Astronomicheskaya observatoriya Leningradskogo universiteta.
(Mars (Planet)—Opposition 1956)

3(1) PHASE I BOOK EXPLOITATION SOV/1391

Akademiya nauk SSSR. Astronomicheskiy sovet.

Polnyye solnechnyye zatmeniya 25 fevralya 1952 i 30 iyunya 1954 g. Trudy ekspeditsiy po nablyudeniyu zatmeniy (Total Eclipse of the Sun, February 25, 1952 and June 30, 1954. Transactions of the Expedition to Observe Solar Eclipses) Moscow, Izd-vo AN SSSR, 1958. 357 p. 1,200 copies printed.

Editorial Board: Pariyskiy, N.N., Candidate of Physical and Mathematical Sciences (Resp. Ed.); Kononovich, E.V. (Secretary); Kuz'min, A.D., Candidate of Technical Sciences; Mogilevskiy, E.I., Candidate of Physical and Mathematical Sciences (Deputy Resp. Ed.); Mustel', E.R., Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: Yegorova, N.B.; Tech. Ed.: Kashina, P.S.

PURPOSE: This book is intended for amateur and professional astronomers interested in eclipse phenomena.

COVERAGE: The present compendium is the fourth in a series published by the Academy of Sciences of the USSR on solar eclipses observed in the Soviet Union. The present collection reports on the results

Card 1/6

PHASE I BOOK EXPLOITATION 895

Sharonov, Vsevolod Vasil'yevich

Priroda planet (The Nature of Planets) Moscow, Fizmatgiz, 1958. 552 p. 3,000 copies printed.

Ed.: Samsonenko, L.V.; Tech. Ed.: Gavrilov, S.S.

PURPOSE: The book is intended for astronomers investigating the nature of planets.

COVERAGE: The author discusses the astronomical and astrophysical methods and techniques for observing planets and satellites in detail and presents the principles applied in processing and interpreting the observations obtained. Particular attention is given to the latest investigations of the nature of the Moon, the surfaces and atmospheres of the larger planets, the asteroids, and the satellites of large planets. Theoretical and practical problems related to the physical conditions existing on celestial bodies with and without atmosphere are also discussed. In 1949 the author suggested the term "planetovedeniye" which literally translated means "planet study" to designate that branch of astronomy which deals with the study of the physical and chemical aspects of

Card 1/8

The Nature of Planets 895

Card 3/8

Card 6/8

AVAILABLE: Library of Congress

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Card 8/8

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A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 4, pp. 43-44, # 3174

AUTHOR: Sharonov, V. V.

TITLE: Integrated Visual Photometry of the Solar Corona in 1952 and 1954

PERIODICAL: V sb.: Polnyye solnechn. zatmeniya 25 fevr. 1952 i 30 iyunya 1954, Moscow, AN SSSR, 1958, pp. 62-80

TEXT: The results of visual photometry of the solar corona at the total eclipses of 1952 and 1954 are reported. Detailed theoretical considerations are given which pertain to determination of the corona integrated brightness. Possible errors in determination of the corona integrated brightness are discussed, as well as their necessary reduction. Wedge photometers were used in observations. Illumination from the corona was determined as a difference between illuminations evaluated by the first photometer (corona + sky) and the second photometer (sky). The author proposes to observe the Moon, the Sun, or laboratory standards for the photometric standardization of the photometers. The problem of allowance for atmospheric extinction is discussed in detail. It is pointed out that the

Card 1/2

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Integrated Visual Photometry of the Solar Corona in 1952 and 1954

atmospheric state changes during the eclipse total phase and this can give rise to considerable errors in the final results. Four methods of determining the atmospheric transparency during the whole eclipse are proposed. The results of observations of the eclipses in 1952 and 1954 are presented. The following conclusions are drawn from the comparison of data on five eclipses observed by the expeditions of the Astronomical Observatory of LGU (1936-1954): The method developed by the author yields the results which are in a better mutual agreement than those obtained earlier; the accuracy of observational results of one eclipse amounts to 10-20%; fluctuations of the corona integrated brightness from one eclipse to another were not detected in the material obtained, hence they were small; the mean corona brightness, referred to the mean values of parallaxes, is equal to 0.07 lux or 0.23 of the brightness of the full Moon, or 5.10^{-7} of the Sun's brightness. There are 18 references.

V. F. Yesipov

Card 2/2

S/035/60/000/04/11/017
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 4, p. 44, # 3177

AUTHOR: Sharonov, V. V.

TITLE: Visual Colorimetry of the Solar Corona

PERIODICAL: V sb.: Polnyye solnechn. zatmeniya 25 fevr. 1952 i 30 iyunya 1954, Moscow, AN SSSR, 1958, pp. 199-206

TEXT: This is a report on the development and application of the qualitative method of comparing the corona and Sun's radiations by means of a colorimeter with the blue wedge. Four eclipses were observed. A Rosenberg-type astrophotometer was used as a visual astrocolorimeter. A detailed description of the equipment and observational method is given. A team of 6-7 persons performed the observations. During the total phase, up to 19 estimates were made by each. The accuracy of a single measurement amounted to $\mp 0^{m}.03$. A standardization attachment was used for weakening the Sun's brightness when comparing its color with the color of the corona; this attachment included a neutral scattering screen and grating reducers.

Card 1/2

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Visual Colorimetry of the Solar Corona

A method is described of eliminating the selective attenuation effect in the Earth's atmosphere from the results of colorimetric comparison. It is pointed out that the effect of the bluish background of the sky scattered light can be neglected, since its brightness is lower, by three orders of magnitude, than the brightness of the observed regions of the inner corona. The photograph of the equipment is given, as well as the composite table of colorimetric determinations of the solar corona color. The table contains also the results of photographic determinations of the color excesses for comparison. The results show that the radiation of the corona during all the eclipses was slightly redder than the solar radiation. There are 11 references.

V. F. Yesipov

Card 2/2

SHARONOV, V V

AUTHOR: Chekiria, A. T., Candidate of Physical and Mathematical Sciences

SOV/30-58-8-21/43

TITLE: From the Council of Astronomers (V astronomicheskon sovete) Transactions of the Plenary Meeting of the Committee of Planetary Physics (Plenum Komissii po fizike planet)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 8, pp. 113-114 (USSR)

ABSTRACT: This plenary meeting was held in Khar'kov from May 20-22. It was attended by the astronomers of a number of observatories of the USSR, by representatives of the Council of Astronomers and by the Director of the Nanking Observatory Chzhan Yuy-chzhe. Results of observations of the surface of Mars and of the moon in 1956 were the subject of the reports. The following lectures were held:

V.V. Sharonov stated that the surface of Mars is darker and more red than corresponding samples from terrestrial deserts.

N.P. Barabashov discussed results of Mars photometry which were conducted by him in the Khar'kov observatory with the assistance of I.K. Koval'.

Card 1/4

From the Council of Astronomers. Transactions of the Plenary Meeting of the Committee of Planetary Physics SOV/30-58-8-21/43

K.I. Kozlova, Yu.V. Glagolevskiy communicated some results of Mars photometry which was carried out by the Sektor astrobotaniki Akademii nauk Kazakhskoy SSR (Department of Astrobotany AS Kazakh USSR).

A.N. Suslov spoke on the intensity of [illegible] lines.

N.P. Barabashov, V.I. Yezerskiy, A.T. Chekirda reported on results [illegible] photometry obtained in the observatory of Crimea.

N.D. Kalinenkov reported on spectrophotometric measurements of details of the surface of Mars which were conducted in Kazan'.

B.A. Bronshten, O.B. Rzhanitsyna reported on results of photographic photometry of the bright region Argir on Mars.

M.M. Butelava, A.A. Kalinyak, L.A. Kamionko reported on the first utilization of electron-optical transducer in photographing Mars in the Pulkovo observatory.

V.V. Sharonov reported on most recent Mars research in foreign countries.

N.P. Barabashov spoke about problems and methods of lunar research.

Card 2/4

B.Yu. Levin, L.V. Mayeva spoke about results of the theoretical investigation of the thermal history of Mars and the moon.

B. Yu. Levin spoke about the history of the motion of the moon and about geological properties of its material.

V.V. Sharonov, Professor, read the paper by N.N. Sytinskaya on the development and the confirmation of the hypotheses concerning the nature of the surface layers of the moon.

A.V. Markov reported on the equipment in Pulkovo for thermoelectrical temperature measurements of narrow strips of the surface of the moon.

Yu.N. Chistyakov communicated the first results of research with this equipment.

N.N. Kaydanovskiy spoke about prospects in the investigation of thermal radiation from the moon (based upon observations by Ye.K. Kokhan in the Abastumani observatory).

N.P. Barabashov, I.K. Koval' reported on preliminary results of the investigation of the polarization of the moon

by means of light filters.

Yu.N. Lipskiy spoke about the necessity of taking into consideration the variations in the degree and the direction of polarization of moon details, when they are spectrophotographed simultaneously.

T.A. Polozhentseva
V.G. Teyfel'
A.N. Sergeyeva
N.P. Barabashov
V.I. Yezerskiy
V.A. Fedorets

reported on the determination of color contrasts on the surface of the moon by means of photographic spectrophotometry.

3(7)

AUTHOR: Sharonov, V.V. SOV/43-58-19-15/16

TITLE: Some Results of the Observation of Mars During the Opposition 1956 (Nekotoryye rezul'taty nablyudeniy Marsa vo vremya velikogo protivostoyaniya 1956 goda)

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1958, Nr 19(4), pp 187 - 202 (USSR)

ABSTRACT: The observations were carried out by an expedition of the Observatory of the Leningrad University in the Tashkent Observatory from August 11, 1956 - September 24, 1956. Instruments: A standard astrograph and 6" equatorial. The principal aim was the photometric investigation of Mars. The results will be published later on. In the present paper only the results of the direct observations with the 6" refractor under 100 - 600-fold enlargement carried out parallely (to the control) are given. Observations carried out under guidance of V.A. Bronshten in Stalingrad and photographs of Mars by N.S. Orlova and I.A. Parshin are also considered.

The most essential results are 1.) A strong light spot in the zone Noarchis - Argyre in the last decade of August; most

Card 1/ 3

strongly characteristic on August 27 as a wide light band around the polar cap, separated from this by a relatively dark zone. After September 2 it was no longer observed. The question whether these were atmospheric or surface variations was not answered. 2.) Intensive yellow nebulas in September. The most characteristic property of these nebulas was the fact that the brightness and colour of the continents practically did not change during their occurrence, so that the nebulas could be only discovered by the covering of the oceans or of other dark parts or by the occurrence of a general yellow vapor in the atmosphere of the mars. The yellow nebulas serve the author for the explanation of different other phenomena, e.g. the vanishing of the pole cap, the fact that almost no violet clouds were observed in 1956, etc. On the nature of the yellow nebulas it is assumed that they are aerosols; the question remains open, from where these aerosols are coming in such quantities and why they occur just in 1956. The following scheme is proposed : The atmosphere of Mars consists of nitrogen and carbon dioxide and contains a substance which can form the aerosols by

sublimation and condensation. Probably this substance is water. Different other theories are critically discussed.
There are 25 references, 16 of which are Soviet, 3 French, 5 American, and 1 German.

SUBMITTED: October 11, 1957

Card 3/3

3(*),24(4) SOV/33-35-5-13/20

AUTHORS: Radlova, L.N., and Sharonov, V.V.

TITLE: The Threshold of Colour Distinction During Visual Observations of the Lunar Surface and the Maximal Colour Difference of Lunar Objects (Porog tsvetorazlicheniya pri vizual'nom nablyudenii lunnoy poverkhnosti i predel'noye razlichiye tsvetnosti lunnykh ob"yektov)

PERIODICAL: Astronomicheskiy zhurnal, 1958, Vol 35, Nr 5, pp 788-791 (USSR)

ABSTRACT: At the Observatory of Tashkent a series of experiments was carried out for the investigation of the threshold of colour distinction during visual observations of the lunar surface. The author describes his arrangement of experiments and formulates his results on the maximal colour difference of lunar objects.
There are 3 tables and 7 references, 3 of which are Soviet, 3 American, and 1 German.

SUBMITTED: July 16, 1957

Card 1/

SHARONOV, V.V.

Conference on noctilucent clouds during the International Geophysical Year. Astron.tsir. no.192:33-34 My '58. (MIRA 11:10)

1.Astronomicheskaya observatoriya Leningradskogo gosudarstvennogo universiteta, Leningrad.
(Clouds)

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3.1550

Translation from: Referativnyy zhurnal, Geofizika, 1960, Nr 1, pp 10 - 11 (USSR)

AUTHOR: Sharonov, V.V.

TITLE: The Nature of Surface and Atmosphere of Mars by Data From Observations in 1956

PERIODICAL: Astron. tsirkulyar, 1958, Sept 18, Nr 195, pp 7 - 8

ABSTRACT: Measurements of the values of luminosity (coefficient of brightness) and of chromaticity (expressed in the form of the difference between the colorimetric index of the object and that of an absolute white screen) showed that the specimens of covers from clay, stone, and sand deserts and, moreover, of sands of different origin are similar in the average values of the characteristics mentioned, whereas the Mars surface differs from them by being 0.^{m}6 redder in color. This fact refutes the opinion on the similarity of the Mars continents and the earth deserts, and the Dolfus conjecture confirmed, that the continent surface is covered by powderlike limonite. The author put forward

Card 1/2

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3.1550

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1959, Nr 9, p 58 (USSR)

AUTHOR: Sharonov, V.V.

TITLE: Visual Comparison Between the Brightness and Color of the Disk of Mars With Samples of the Covering of Terrestrial Deserts

PERIODICAL: Uch. zap. LGU, 1958, Nr 273, pp 120 - 143

ABSTRACT: A comparison was carried out of the surface of Mars and terrestrial landscapes, simultaneously in two optic parameters, i.e., albedo and color. The results of the visual observations carried out at the Tashkent Astronomic Observatory in 1956 were used. A Rozenberg astrophotometer with a magnifying device was used which was mounted on the guide of a normal astrograph. Its polarization system served to measure the integral brightness of Mars and the brightness of individual points on the planet disk, and its blue wedge served to measure the color. The standardization of the photometric observations was carried out with regard to the sunlight. There is a description of the apparatus and the technique used for working with it, the calibration of grey filters, the blue wedge, the standardization screens and other optical parts of the apparatus. The obtained geometric, spheric, and visual albedo, as well

Card 1/2

Visual Comparison Between the Brightness and Color of the Disk of Mars With Samples of the Covering of Terrestrial Deserts

as the yellowness index are given in tables. The same apparatus, in conjunction with a medium-sized elbow telescope, was used to measure over 100 samples of terrestrial covers under laboratory conditions. Samples of the stoney desert, clay desert, salt crusts, efflorescent places, sands from the deserts, as well as sands from other formations were studied. The statistical comparison with the data for Mars was carried out by the method of diagrams - brightness versus color. It was found that not one of the types of terrestrial covers was similar to those of Mars, since the value of the yellowness index of the latter was higher by 0.6 units of the color index than that for the studied types of desert covers. Therefore, the wide-spread opinion held on the semblance of the coloring of the surfaces of Martian mainlands and the terrestrial deserts was found to be wrong. Bibl. 17 titles.

N.S. Orlova

Card 2/2

Shidlovskiy, V.V

PHASE I BOOK EXPLOITATION

SOV/3839
SOV/58-M-24(31)

Vsesoyuznoye astronomo-geodezicheskoye obshchestvo

Byulleten', No. 24/31/, 1959 (Bulletin, No. 24/31/,1959) Moscow, Izd-vo AN SSSR, 1959. 77 p. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR.

Ed. of Publishing House: K.P. Gurov; Tech. Ed.: G.A. Astaf'yeva; Editorial Board: V.V. Fedynskiy (Resp. Ed.), M.S. Bobrov (Deputy Resp. Ed.), M.M. Dagayev, I.T. Zotkin, A.A. Izotov, P.P. Parenago, P.I. Popov, V.A. Bronshten (Scientific Secretary).

PURPOSE: This publication is intended for astronomers, geophysicists, geodesists, and theoretical physicists.

COVERAGE; This issue of the Bulletin of the All-Union Astronomical and Geodetic Society contains articles on lunar and solar eclipses, photographic observation

Card 1/3

Bulletin (Cont.)

of Jupiter and Perseid, noctilucent clouds, a collimating view finder, and the modeling of lunar cirques. The Kuybyshev Astronomical Observatory is described in a separate article. References accompany individual articles.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

Card 3/3

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PHASE I BOOK EXPLOITATION [illegible]

Akademiya nauk SSSR. Astronomicheskiy sovet. [illegible]

Rezul'taty nablyudeniy Marsa vo vremya veli[illegible] (Results of the Observation of Mars in [illegible] of 1956) Moscow, Izd-vo AN SSSR, 195[illegible]

Ed.: N.P. Barabashov, Academician, Acad[illegible] House: V.A. Bronshten; Tech. Ed.: V.[illegible]

PURPOSE: The book is intended for astro[illegible] those interested in the study of the p[illegible]

COVERAGE: This is a collection of 8 arti[illegible] Mars during the opposition of 19[illegible] Committee for the Investigation of [illegible] of the Astronomic Council of the [illegible] mainly at the southern observatories [illegible] August to December, 1956. The prelim[illegible] summarized at a conference of all partici[illegible] 1956. The present publication covers the [illegible] and atmosphere by photometry as well as by visual [illegible] the flora of the planet and the photometric investig[illegible] of its l[illegible] Argyre zone. References accompany most of the articles.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

Card 3/3

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Translation from: Referativnyy zhurnal, Geofizika, 1960, No. 7, p. 201, # 8455

AUTHOR: Sharonov, V.V.

TITLE: Results of the International Symposium on Noctilucent Clouds

PERIODICAL: Tr. Soveshchaniya po serebristym oblakam. 1958. (P.I). Tartu, 1959, pp. 7-22 (Engl. summary)

TEXT: The International Symposium on noctilucent clouds took place on September 6, 1958, in Moscow; more than 100 scientists participated. Six lectures were heard. The lecture of Payton on "The Noctilucent Clouds" presented results of observations carried out at Abernetty, Scotland, from 1939 to 1958. During the period mentioned, 28 events of noctilucent clouds were registered. The determination of the altitudes yields values from 84 to 89 km at a base distance of 27.8 km. The lecture of Vestin and Dermendzhan on "Some Remarks in Connection With the Nature and Origin of the Particles in Noctilucent Clouds" dealt with the analysis of spectrophotometric observations of noctilucent clouds, which were conducted by N.I. Grishin (RZhGfiz, 1958, No. 6, 4664). It was found that the scattering power of the particles forming a cloud rapidly increases to the violet

Card 1/4

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Results of the International Symposium on Noctilucent Clouds

end of the spectrum, and thereby the course appears close to the Rayleigh course, while the variation of brightness with the direction of the scattered ray turns out to be different. The data obtained correspond to scattering by particles, which have the nature of dielectric balls with a radius of about 0.4 or by a mixture of balls of different dimensions with the most frequent radius of about 0.1 . The author considers, basing on the optic characteristics obtained, two hypotheses to be probable: according to the first hypothesis, the particles represent ice crystals or condensation nuclei covered by a water layer; according to the second hypothesis, they must be mineral particles of silicate composition. Hoffmeister attributes in his lecture "The Nature and Origin of Noctilucent Clouds" the phenomenon of noctilucent clouds to the penetration of micrometeor streams into the terrestrial atmosphere. At high altitudes, the latter cause the additional glow of the night sky, which can be observed in the form of bright bands. The meteorite material clusters at the boundary between the stratosphere and ionosphere and becomes visible in the form of luminous clouds. The existence in the ionosphere of seasonal streams transporting dust particles from the equator to the polar circle and generating there enhanced concentration of particles at the altitude of 80 km, permits the explanation of the distribution of noctilucent

Card 2/4

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Results of the International Symposium on Noctilucent Clouds

clouds over the seasons and the latitudes, as well as their relatively rare occurrence. I.A. Khvostikov states in his lecture on "The nature of the Noctilucent Clouds" that the condensation of water vapor may take place only under the condition that the tension of the saturated vapor does not exceed the pressure of the air. This condition is fulfilled in the terrestrial atmosphere only within some definite range of altitudes including a narrow layer between 80 and 90 km, where ice crystals are formed due to vapor condensation and noctilucent clouds emerge. V.V. Sharonov gave a lecture on "The Frequency of Phenomena of Noctilucent Clouds From Observations at the Stations of the USSR", in which he noticed that the statistical investigation of the distribution of noctilucent clouds over the latitudes and the seasons, which was carried out on the basis of materials published in the literature, is insufficient, because the number and the activity of the observers are not equal. Regular observations were performed during the IGY at 220 stations, which gave material suitable for statistics. It is ascertained that the season of visibility of noctilucent clouds extends from mid March to mid October, and the zone of latitudes is confined between 45° and 68°. N.I. Grishin lectured on "Wave Motions and Meteorological Conditions of the Noctilucent Cloud Phenomenon". Filming and stereoscopic observing permitted the study of the wave motion features

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A005/A001

3,5000

Translation from: Referativnyy zhurnal, Geofizika, 1960, No. 7, p. 203, # 8464

AUTHOR: Sharonov, V.V.

TITLE: The Plan of Observations of Noctilucent Clouds in 1959

PERIODICAL: Tr. Soveshchaniya po serebristym oblakam, 1958, (P.I). Tartu, 1959, pp. 112-122 (English summary)

TEXT: The plan of observations of noctilucent clouds in 1959 consists of four topics: 1) The investigation of the frequency of occurrence of noctilucent clouds. It is necessary, for the correct determination of the frequency of occurrence of noctilucent clouds, to consider the meteorologic conditions. The observations of noctilucent clouds are usually impossible or nearly impossible, when tropospheric cloudiness exists. In 1959 it is intended to measure also the positions of the noctilucent cloud fields. 2) The determination of the direct altitudes of noctilucent clouds above the terrestrial surface. The work will be carried out according to the M.I. Burov method (see Ref. 8463). 3) The study of the structure and motion of noctilucent clouds. The main method for solving this problem is the basic survey of the clouds. Examination of the photographs

Card 1/2

S/269/63/000/002/026/037
A001/A101

AUTHOR: Sharonov, V. V.

TITLE: The surface and atmosphere of Mars from photographic, photometric and colorimetric observations performed in 1956 at Tashkent

PERIODICAL: Referativnyy zhurnal, Astronomiya, no. 2, 1963, 63, abstract 2.51.501 (In collection: "Rezul'taty nablyudeniy Marsa vo vremya velikogo protivostoyaniya 1956 g. v SSSR", M., AN SSSR, 1959, 123 - 154)

TEXT: The following phenomena are described: decrease in diameter of the southern polar cap, formation of a rim around it, appearance and development of a bright cloudy formation in the region Noachis Argyre at the end of August, disappearance of the southern polar cap in the beginning of September, development of common yellow haze in mid-September. The results of integrated photometry and colorimetry of Mars carried out by means of a Rosenberg photometer are presented. The following average values of albedo are determined: geometric 0.139, illustrative 0.208, spherical albedo 0.154; yellowness index is +1.066. The visible albedo of continents in the center of the disk has the

Card 1/3

The surface and atmosphere of Mars from...

value 0.184 determined by absolute photometry of individual regions using the method of reflecting screen. For seas the albedo value fluctuates between 0.06 and 0.12 amounting on the average to 0.105. Darkening toward the disk limb was decreasing with development of fogs and was increasing when the atmosphere was clearing. The yellowness index for various regions of continents was obtained on the average +1.09 and for seas +0.89. It is concluded thereof that seas are also colored red but not so intense as the color of continents; their greenish tint perceived visually is not real and has a physiological origin. The results of photometric and colorimetric investigations of terrestrial specimens are presented, from which it follows that desert covers are not similar in color to Mars. The problem of yellow fogs is discussed, as well as their interaction with violet clouds; a hypothesis is expressed that the latter are located in the lower layer of the atmosphere. The orange color of the planet surface and of some fogs is ascribed to the presence of large quantities of powder-like limonite. The author presents a general scheme of eolian processes on Mars, according to which seas are zones of eolian erosion and deflation; atmospheric currents carry away dust from them revealing partially a darker and less tinted original ground. Continents are zones of accumulation

The surface and atmosphere of Mars from...

of deflation products which represent a dust-like material of orange color, remaining loose due to absence of water. There are 32 references.

I. Lebedeva

[Abstracter's note: Complete translation]

S/269/63/000/002/027/037
A001/A101

AUTHOR: Sharonov, V. V.

TITLE: An experience of determining contrasts on the disk of Mars by the methods of measuring visibility

PERIODICAL: Referativnyy zhurnal, Astronomiya, no. 2, 1963, 63, abstract 2.51.502 (In collection: "Rezul'taty nablyudeniy Marsa vo vremya velikogo protivostoyaniya 1956 g. v SSSR", M., AN SSSR, 1959, 155 - 165)

TEXT: The photometric investigation of small details on the planetary disk can employ, in addition to visual, photographic and photoelectric photometry, the methods of "visibilimetry" consisting in determining brightness contrasts by the degree of their visibility. The first of these methods consists in reduction of an object to disappearance, i.e., decreasing of visible contrast by means of proper optical accessories to the magnitude of the threshold of contrast sensitivity of sight. Technically it is accomplished most conveniently by the superposition on the object and on the background of a veiling brightness

Card 1/3

An experience of determining contrasts on the...

which is created by the light of either the planet itself or a special light source. Various observational schemes by this method are described, as well as their practical application to Martian seas in 1956. The second method consists in creating in the sight field of the telescope of some artificial object on which can be seen an arbitrarily changed contrast of brightness. An observation consists in equalizing this contrast with the visible contrasts of objects on the disk of the planet. The author describes the application of a Rosenberg photometer, during which the image of an artificial planet of the same size, brightness and color was obtained side-by-side with the image of Mars. Details were seen on the artificial disk whose contrast it was possible to change by means of a special contrast-measuring wedge. The third method, consisting in estimating the brightness of details by one of the proposed by-sight scales, is discussed and rejected due to its insufficient accuracy. Instead a method is proposed which is based on mounting an artificial object with constant brightness contrast in the telescope sight field; this object is compared with details of the planetary disk. The theory of this and its technical description are presented. The results of Mars observations by various visibilimetric methods are intercompared and compared with data of photometric measurements. A table

S/269/63/000/002/027/037
A001/A101

An experience of determining contrasts on the...

gives average values of contrast of the Martian seas for each night of observations in August and September 1956. Periods of clearing and turbidity in the atmosphere of the planet are noted. There are 12 references.

I. Lebedeva

[Abstracter's note Complete translation]

Card 3/3

SHARONOV, V.V.

Dependence of the frequency of appearance of noctilucent clouds on season and geographical latitude. Mezhdunar.geofiz.god. no.7:42-45 '59. (MIRA 13:2)

(Clouds)

3(1)

AUTHOR: Sharonov,V.V. SOV/43-59-13-15/16

TITLE: Investigations of Silvery Clouds in 1958

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1959, Nr 13(3), pp 145-147 (USSR)

ABSTRACT: In the geophysical year 1958 the following institutes participated in the observation of silvery clouds:

1) LGU Astronomical Observatory; leader: Professor V.V. Sharonov, lab.workers: L.F.Gromova, and T.D.Pavlova. Material of observations was sent from 201 stations of the USSR and 6 stations of the Mongolian Republic. Silvery clouds were observed 128 times.
2) Petrodvorets Atmospherical-Optical Station; preparer: E.I. Adrianova, lab.worker: L.F.Gromova.
3) Institute of Applied Geophysics; N.I.Grishin.
4) Urals State University; V.Yu.Skul'skiy.
5) All-Union Society of Astronomy-Geodesy; Professor Ye.Ya. Bugoslavskaya, N.I.Grishin, V.A.Bronshten, Professor I.A. Khvostikov.

In 1958 the following congresses took place to the theme:
1) March 27-28, Leningrad in the rooms of the AOLGU. There were lectures of V.V.Sharonov, N.I.Grishin, L.F.Gromova, T.D.Pavlova,

Card 1/2

Investigations of Silvery Clouds in 1958 SOV/43-59-13-15/16

N.N.Sytinskaya, O.B.Vasil'yev, V.A.Bronshten.

2)September 6. 1958, International Symposium on Silvery Clouds, in the great physical lecture-room of the Moscow State University. President: Professor V.V.Sharonov.

3)December 12-14, 1958, Congress on Silvery Clouds organized by the Academy of Sciences of the Estonian SSR together with VAGO and the Committee of the MGG in Tartu. Opening address by Academician A.Ya.Kipper. Reports of M.A.Dirikis (Riga), Ch.I. Villman (Tallinn), U.K.Veltmann (Tartu), Ye.Ye.Artemkin (Ryazan'), Ye.G.Demidovich (Gor kiy), V.Yu.Skul'skiy (Sverdlovsk). Lectures of M.I.Burov, O.B.Vasil'yev.

The author mentions Professor V.G.Riives, Director of the Tartu Observatory.

SUBMITTED: April 11, 1959

Card 2/2

SHARONOV, V.V. (Leningrad)

New method for evaluating the brightness of lunar eclipses according to the visibility of lunar surface features. Biul. VAGO no.24:18-23 '59. (MIRA 13:4)

1. Astronomicheskaya observatoriya Leningradskogo gosudarstvennogo universiteta.
(Eclipses, Lunar)

SHARONOV, V.V.

Results of the observations of Mars during the favorable opposition of 1956. Biul.Inst.astrofiz. AN Tadzh.SSR no.27: 5-15 '59. (MIRA 13:5)

(Mars (Planet)--Opposition, 1956)

SOV/26-59-2-16/53

3(7)
AUTHOR: Sharonov, V.V., Professor

TITLE: New Data on the Distribution of Luminous Clouds (Novyye dannyye o raspredelenii serebristykh oblakov)

PERIODICAL: Priroda, 1959, Nr 2, pp 81-83 (USSR)

ABSTRACT: The article deals with the appearance and the study of so-called "silvery" or "noctilucent" clouds. These clouds were usually observed from those points of the Earth where they were just over the setting sun. L.F. Gromova of the Astronomicheskaya Observatoriya (Astronomical Observatory) of Leningrad University compiled a table after having studied cases of the appearance of these clouds over Soviet territory from 1885 to 1956. It can be seen from this table: the earliest appearance of luminous clouds took place in the middle April and the latest - in the first part of October. In connection with the International Geophysical Year more than 220 Soviet

Card 1/2

New Data on the Distribution of Luminous Clouds SOV/26-59-2-16/53

hydrometeorological stations are observing the sky regularly especially between 45° and 75° latitude. In 1957 the largest number of observed clouds was in the zone of 60° latitude. There are 2 tables, 1 graph and 1 Soviet reference.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

Card 2/2

PARSHIN, Igor' Aleksandrovich; SHARONOV, V.V., prof., red.; SAMSONENKO, L.V., red.; AKSEL'ROD, I.Sh., tekhn.red.

[The moon] Luna. Pod red. V.V.Sharonova. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1960. 53 p. (Populiarnye lektsii po astronomii, vyp.10). (MIRA 14:1)
(Moon) (Lunar probes)

SHARONOV, V. V.

"The Microrelief Of The Lunar Surface And Probable Ways Of Its Formation."

paper presented at IAU Symposium on the Moon, Leningrad, USSR, 6-8 Dec. 60.

Photometric and colorimetric observations show that for all the regions of the lunar surface the scattering diagrams are strongly elongated towards the Sun, the color differences are very small and the albedo ratios do not exceed 1:3. As there is little doubt in that morphologically the different regions of the lunar surface are composed of rocks of different petrographic composition, the above noted uniformity can be explained by the lunar surface being covered by a layer of special material, which is the result of the alteration of the initial lunar material by exogenous factors (eg., meteorite impacts). Examples of such material can be volcanic alag and lapilli, the surface of which is very uneven having deep depressions with steep sides and sharp edges.

Leningrad University

PHASE I BOOK EXPLOITATION SOV/4831

Sharonov, Vsevolod Vasil'yevich, Doctor of Physics and Mathematics

Chto my znayem o Lune (What We Know About the Moon) [Leningrad] Lenizdat, 1960. 76 p. 10,000 copies printed. [Xerox copy]

Ed.: V.I. Sinyutin; Tech. Ed.: R.G. Pol'skaya.

PURPOSE: This book is intended for the general reader interested in the nature of the moon and the possibility of travel to the moon.

COVERAGE: The author gives an account of present-day views on the nature of the moon as a cosmic body and as the object of space travel. He describes the structural and qualitative characteristics of the surface of the moon and the laws governing lunar motion. The prospects of reaching the moon and of subsequently bringing that body under man's control are discussed. No references are given.

TABLE OF CONTENTS:

Card 1/2

PHASE I BOOK EXPLOITATION SOV/4333

Leningrad. Universitet

Mezhdunarodnyy geofizicheskiy god; sbornik statey i materialov (International Geophysical Year; Collected Articles and Materials) [Leningrad] Izd-vo Leningradskogo univ., 1960, 222 p. 1,500 copies printed.

Resp. Ed.: K. Ya. Kondrat'yev, Professor; Ed.: Z.I. Tsar'kova; Tech. Ed.: Ye. G. Zhukova.

PURPOSE: This publication is intended for scientific research workers and graduate students in the fields of astronomy, geophysics, and geography.

COVERAGE: This collection of 18 articles presents the first results of work performed by the members of the faculty of the Leningradskiy universitet (Leningrad University) under the IGY program. Individual articles deal with the problems of the physics of atmosphere, the conditions for the observation of noctilucent clouds, and the analysis of the radiation balance. Other articles present data gathered by a comprehensive expedition for studies in geomorphology,

Card 1/5

hydrology and climatology. No personalities are mentioned. References follow each article.

TABLE OF CONTENTS:

International Geophysical Year (Cont.)

International Geophysical Year (Cont.)

International Geophysical Year (Cont.) SOV/4333

Petrov, L.S. Problem of the Relationship Between the Fluctuations of the Arctic Climate and Atmospheric Circulation and Solar Activity 216

AVAILABLE: Library of Congress

Card 5/5

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PHASE I BOOK EXPLOITATION SOV/4313

Barabashov, N.P., V.A. Bronshten, M.S. Zel'tser, N.L. Kaydanovskiy, A.V. Markov, K.P. Stanyukovich, N.N. Sytinskaya, A.V. Khabakov, Sh.T. Khabibullin, V.V. Sharonov, and A.A. Yakovkin

Luna (The Moon) Moscow, Fizmatgiz, 1960. 384 p. 4,500 copies printed.

Ed.: (Title page): A.V. Markov, Doctor of Physics and Mathematics; Ed.: G.A. Manova; Tech. Ed.: N.Ya. Muranhova.

PURPOSE: This book is intended for astronomers, astrophysicists, and other scientific and technical personnel interested in lunar research.

COVERAGE: The book, written by 11 Soviet authorities, summarizes and evaluates research done to date in selenology. The motion, rotation, and figure of the Moon, physical properties of the lunar surface, the question of the existence of lunar atmosphere, mapping of the Moon, radar investigations, and the effect of external cosmic forces on the Moon are discussed. An index of Russian and Latin designations of lunar features is included. The text is illustrated with 110 figures and 32 tables. There are 74 references: 34 Soviet, 32 English, 6 German, and 2 French.

The Moon SOV/4313

The Moon SOV/4313

Card 1/6

3.1550
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67822
SOV/26-60-1-2/45

AUTHOR: Sharonov, V.V., Professor

TITLE: The Moon and Its Nature

PERIODICAL: Priroda, 1960, Nr 1, pp 9-19 (USSR)

ABSTRACT: This article lists many of the facts already known about the moon and describes several hypotheses on the origin of lunar features. After a general introduction the author summarizes the endogenous and exogenous theories of crater-origin, stating that the former is endorsed by geologist A. V. Khabokov and Academician A.N. Zavaritskiy and the later by Professor V.V. Fedynskiy, Professor K.P. Stanyukovich and P.F. Sabaneyev. Describing attempts made to ascertain the existence of a lunar atmosphere, the author mentions the work of Academician V.G. Fesenkov who, finding no traces of polarization in the penumbra of the twilight zone, concluded that the

Card 1/7

The Moon and Its Nature

mass of the lunar atmosphere must be at least 1 million times less than Earth's.(More recently the estimate has dropped to 10^{-12}). The existence of rarefied gas around the moon was confirmed by the second Soviet space rocket. The gas is of an unusual ionospheric type and was traced by a trap located in the container which separated itself from the rocket and recorded the currents of ionized gas particles. These were first registered 10,000 km from the moon after which their number increased. Discussing the luminescence frequently observed on the unlit areas of the lunar surface, the author states that computations made with the instrument container neither confirmed this phenomenon nor revealed the presence of any noticeable magnetic field. More precise data on luminescence were obtained by the Czech scientist F. Link who made photometric lunar observations during an eclipse, correlated them with cal-

Card 2/7

The Moon and Its Nature

culation data and, in most cases, distinguished effusions of brightness which he attributes to the luminescence of the moon's surface. Owing to the complexity of the formulae for brightness calculation these results have yet to be verified. Using the method of the Fraunhofer lines in research on luminescence, Professor N.A. Kozyrev obtained only one positive result from spectrograms of the central hill in the Aristarchus crater. During the night between 2 and 3 November 1957 he noted a bright emission spectrum on a spectrogram of the Alphonsus crater and ascribed it to a gas-cloud from one of the "hills" illumined by some kind of radiation. At the observatory in Leningrad University a detailed chart was made showing the brightness and coloring of lunar features by means of tints characteristic of meteorites and terrestial rocks like magma. No analogous

Card 3/7

The Moon and Its Nature

rocks were observed on the optical parameters primarily because of the moon's low reflectivity. Spectrographic methods showed a monotonous rise in the albedo curve from the violet to red areas of the spectrum. It is assumed that the lunar surface is in fact dark brown in color, being only a little lighter on the "continents" and a little darker in the "seas". This would suggest that the moon is covered by some monochromatic blanket deposit of fairly recent origin. New lunar researches confirm this theory. Describing attempts made to ascertain temperatures on the moon, the author states that the blanket deposit is impervious to radiation on a wave-length of 10 microns, but becomes increasingly viable to radio waves as wave length is extended. Consequently it is possible to determine surface temperature by thermoelectrical methods and subsurface temperature by radio methods. On account

Card 4/7

The Moon and Its Nature

of the low heat-conductivity of the porous surface deposit it is assumed that if the moon is devoid of atmosphere, heat is transferred by small-area points of contact between dust particles and by radiation of heat in the intervening spaces. Conducting a photometric study of the lunar surface, Academician N.P.Barabashov of the AN USSR (AS UkrSSR) and Professor A.V.Markov showed that the nature of the reflection of the sun's rays from the moon demonstrates the existence of elevations and depressions invisible through a telescope. Such irregular terrain seems to disprove the theory that the moon's surface is covered with fine dust. N.S. Orlova, a Leningrad astronomer, explains that reflections from the light and dark areas of the moon are formed in such a manner that much of the light-stream is deflected towards the sun. This type of reflection could only be produced by a highly irregular surface such as could

Card 5/7

The Moon and Its Nature

never be formed by sand, volcanic ash or dust. The actual composition of the moon's surface is suggested in the theory of Professor N.N. Sytinskaya who considers that a substance similar to volcanic slag was formed by the impact explosions of meteorite-swarms. This theory would also explain the uniformity of the lunar surface, especially if other processes (eg. lava formation, volcanic ash deposits, etc.) are at work at the same time. If this is so, meteorite swarms would soon impart a characteristic overall appearance to surface formations. Furthermore, the dark lunar coloring corresponds to that observed on meteorites which have passed through the Earth's atmosphere and can also be seen at high temperatures on basic and ultrabasic rocks containing large quantities of olivine and other high-iron silicates. According to the researches of I.A. Yudin this dark coloring is caused by the decomposition of the silicate molecules and the formation of dark ferric

Card 6/7

The Moon and Its Nature

oxides like iotşite and magnetite. It is possible that some such process prevails on the moon. In concluding the author suggests that the Earth may some day be subject to formations similar to those on the moon and expresses a hope that direct chemical and petrographic studies of the lunar surface will soon be possible. There are 2 photographs.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet imeni A. A. Zhdanova (Leningrad State University imeni A.A. Zhdanov)

Card 7/7

29882
S/169/61/000/009/040/056
D228/D304

3,5120

AUTHOR: Sharonov, V. V.

TITLE: Photometric and colorimetric observations of noctilucent clouds in the summer of 1959

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 9, 1961, 16, abstract 9G142 (V sb. Issled. serebristykh oblakov, no. 1, L., Leningrad. un-t, 1960, 66-76)

TEXT: Photometric and colorimetric methods may be used both when studying the visibility conditions of noctilucent clouds in relation to their position with respect to the sun and observer and when investigating the constituent material of noctilucent clouds, since the absolute values for the dispersion coefficient of light rays for a certain medium, and also their changes with the direction and length of the light-wave, are closely connected with the nature and concentration of the diffusing particles. Therefore the photometric study of the scattering of light in noctilucent clouds can provide material for judging the size, form,

Card 1/1

Photometric and colorimetric...

and composition of the elements of the dispersed phase of the aerosol, whose accumulations we observe as clouds of such a type. The following forms of photometric measurements are possible: (1) Relative isochronous photometry consists of the comparison of the brightness of different sections of the sky at a given moment. (2) Relative heterochronous photometry provides the opportunity for comparing the brightness of noctilucent clouds throughout the night or on different nights. (3) Standard photometry at a number of simultaneously-observing stations would permit obtaining part of the indicatrix of dispersion for the cloud substance. (4) Absolute photometric determinations have the task of obtaining the brightness expressed in one of the absolute systems of units (in stilbs or nitids). During absolute photometry it is convenient to use "visible albedo" value ρ, which equals the ratio of the true brightness B to the brightness of an absolutely white screen B_{sc}, situated in the zone of noctilucent clouds normal to the solar rays. Observations were carried out on July 15-16, 1959, when the noctilucent clouds were especially bright. The Rozenberg astrophotometer, mounted

Card 2/7

Photometric and colorimetric...

on an "Assembi" telescope, was used. The instrument was sighted on a clear detail of the cloud cover, after which the adjustment for the congruence of the brightness of the photometer's polarizing system was made. After this, the zenith distance of the given detail was measured by a theodolite. Then the instrument was sighted on a sector of the sky--situated as near as possible to the observed detail and whose appearance was free from cloudy matter. In those cases when the circumstances permitted, the brightness of two clear sections of sky, located above and below the detail, were measured. Measurements of the brightness of the limb of the lunar disc were employed for the photometric standardization. The observation results in mean readings on the circle of the polarizing-system's analyzer for the cloud α_c, for the sky α_{sk}, and for the lunar disc α_l. If the brightness of these objects is respectively designated by B_c, B_{sk}, and B_l, and the zero correction of the readings by Δ, then

4

Card 3/7

Photometric and colorimetric...

$$B'_c = c \sin^4 (\alpha_c - \Delta)$$

$$B_{sk} = c \sin^4 (\alpha_{sk} - \Delta)$$

$$B'_l = c \sin^4 (\alpha_l - \Delta)$$

where c is a certain constant. The true brightness of the cloud B_c — freed from the superimposed brightness of the sky, but weakened by the atmospheric extinction — comprises $B_c = B'_c - B_{sk}$. The true brightness of the lunar limb B_l — freed from the dilution by a gray light-filter, but weakened by the atmospheric extinction — will equal $B_l = B'_l (1 / T)$ where T is the passage coefficient of the grey light-filter. Hence, the albedo of a noctilucent cloud may be derived from the formula

Card 4/7

Photometric and colorimetric...

$$\rho_c = \rho_l \frac{B'_c - B_{sk}}{B'_l} T \qquad (1)$$

ρ_l being the albedo of the lunar limb. The results of the calculations from formula (1) showed that the values of ρ_c range from 3×10^{-6} to 23×10^{-6}. It is impossible to distinguish an object with a brightness that differs so little from the background; this determines, too, the complete invisibility of noctilucent clouds during the daylight hours. Precise determinations of the true color of noctilucent clouds are of great significance since they provide an answer to the question of the size of the cloud's constituent particles. The specific "noctilucent," i.e., bluish-gray, color of the clouds is treated by many authors as an indication in favor of scattering by the very small particles of the aerosol's dispersed-phase, which provides the course for the change in the dispersion coefficient close to the Rayleigh trend. Since it is impossible to observe the true color of noctilucent clouds in consequence

Card 5/7

Photometric and colorimetric...

of distortion by the atmospheric extinction and background of the sky, the "index of yellowishness" d_c was determined to assess the color of these formations. If the color index of noctilucent clouds is designated by C_c, and that of the calibration-screen, which is illuminated by the sun and situated in the cloud zone, is denoted by C_{sc}, then $i_c = C_c - C_{sc}$. For the overall brightness, $d'_c = C'_c - C_{sc}$, where C'_c is the overall color-index. Measurements of the color of the brightest sections of noctilucent clouds were completed on the nights of July 15 and 16, 1959, by means of the same set-up which served for the brightness measurement. The results of the calculations showed that the visible magnitudes of the yellowishness factor d'_c have values of from $-0^m.3$ to $-0^m.4$. The fact that these values are negative is the objective confirmation of the subjective impression of the bluish color of the clouds. The true value for the index of yellowishness d_c is on an average equal to $-1^m.00$; this signifies an extremely intense azure color comparable to

Card 6/7

29881
S/169/61/000/009/040/056
D228/D304

Photometric and colorimetric...

the hue of the bluest areas of a clear daylight sky, for which fresh measurements give values of d in the range from $-1^{m}.0$ to $-1^{m}.2$. This also corresponds to the values of d for radial flow dispersed according to Rayleigh's law. There is a bibliography with 12 references.
[Abstracter's note: Complete translation.]

Card 7/7

SHARONOV, V.V.

Observations on the frequency of noctilucent clouds made at stations of the U.S.S.R. Nek.probl.meteor. no.1:115-116 '60. (MIRA 13:8)

(Clouds)

SHARONOV, V.V.

Problems and methods of absolute photometry of noctilucent clouds. (MIRA 13:8)
Nek.probl.meteor. no.1:124-140 '60.
(Clouds) (Photometry)

40006
S/035/62/000/008/041/090
A001/A101

3,1550

AUTHOR: Sharonov, V. V.

TITLE: Some results of Mars observations during the opposition of 1958

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 8, 1962, 78, abstract 8A538 ("Izv. Komis. po fiz. planet", 1960, no. 2, 24 - 29)

TEXT: Mars was observed at the Observatory of the Leningrad University from October 1958 to April 1959 by means of a 6" refractor and a 200-mm meniscus telescope using the diaphanoscopic method and sometimes by the method of by-sight scale. The contrast of seas was determined regularly. It was very low from 13 to 17 November, which is ascribed to dust haze. Later on the Mars atmosphere cleared, although its transparency continued to fluctuate. Visual-colorimetric observations were conducted by means of the blue wedge of a Rosenberg astrophotometer, and no changes in Mars integrated color with phase was detected within the limits of phase angles from 2 to 38°. The value of 1.18 was obtained for the yellowness index. Visual photometry, which was carried out with the same photometer by comparing off-focus disks of Mars with stars, led to the following re-

Card 1/2

Some results of Mars...

S/035/62/000/008/041/090
A001/A101

sults: The magnitude during the medium opposition m_o = -1.89, absolute value of = 1.40, phase coefficient = 0.017, magnitude/degree, geometric albedo A_g = 0.145, spheric albedo A_s = 0.161. There are 8 references.

I. Lebedeva

[Abstracter's note: Complete translation]

Card 2/2

30272

S/035/61/000/010/026/034
A001/A101

3, 1550 (1041, 1057)

AUTHOR: Sharonov, V.V.

TITLE: Photometric and colorimetric comparisons of the surface of Mars with specimens of limonite and red-colored rocks

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 10, 1961, 65-66, abstract 10A456 ("Izv. Komis. po fiz. planet", 1960, no. 2, 30-35)

TEXT: The lightness r of red-colored rock specimens was measured by means of the polarization system of a Rosenberg astrophotometer under laboratory conditions, and their color, expressed in the form of yellowness factor D, by means of the blue wedge of this photometer. About 300 specimens were studied and the results obtained were compared with data obtained earlier for the surface of Mars. It turned out that compact varieties of limonite and such its forms as turfy, bog iron ore, lake iron ore, pisolitic iron ore, ortstein, sandstein, and crusts, incrustations and other formations containing limonite and emerging as a result of erosion of rocks rich in iron, have some similarity with Mars in values of r, which are mainly concentrated within the range 0.1 - 0.2. However, they strongly differ from Mars in D-values, having on the average +0.4 to +0.7,

Card 1/2

Photometric and colorimetric comparisons ...

whereas for continents of Mars D exceeds +1. The same is relevant also to red-colored rocks of the Permian system in the Prikam'ye region. The only formation which proved to be similar to Mars in color is ocherous limonite (r=0.18, D = = 1.01). On this basis the hypothesis is advanced that the smooth surface of the Martian continents is covered everywhere with a relatively homogeneous layer of ocherous dust. The latter remains in loose state due to dry atmosphere and is not cemented; it easily gives rise to yellow clouds, fogs and other turbidities, characteristic of the atmosphere of Mars. There are 8 references.

I. Lebedeva

[Abstracter's note: Complete translation]

Card 2/2

20896
S/034/60/000/208/001/004
E032/E314

3,1550 (1057, 1062, 1129)

AUTHOR: Sharonov, V.V.

TITLE: On the Existence of a Colour-phase Relation for Mars

PERIODICAL: Astronomicheskiy tsirkulyar, 1960, No. 208, p. 11

TEXT: Sh.G. Gordeladze and E.A. Gurtovenko (AZh, Vol.34, No.6, 959, 1957; Izv.GAO UkrSSR, Vol.2, No.2, 140, 1958) have found by photographic means that after opposition the colour of Mars shows a shift towards the blue, while Yu.V. Glagolevskiy and K.N. Kozlova (Tr. Sekt.Astrobotaniki, Vol. 6, 197, 1958) have concluded from their photo-electric measurements that the shift is in the opposite direction. Finally, the present author has carried out some visual-colorimetric observations (ATs, 187, 1957) and concluded that the colour of Mars does not change at all. In order to settle the problem of the colour change during 1958-1959, further visual-colorimetric observations have been carried out. Use was made of a blue wedge of the Rozenberg astrophotometer set up on the 6" refractor of the AO LGU (Astronomical

Card 1/3

4

20896

S/034/60/000/208/001/004
E032/E314

On the Existence of ....

Observatory of Leningrad State University). Since the atmospheric conditions at Leningrad were unfavourable for absolute colorimetric measurements, a differential comparison was made between Mars and the Moon for different zenith distances. The following table shows the difference Δ in the colour indices of Mars and the Moon:

Date	Phase Angle	Δ
1958, Oct. 18	1°	+0.71
Oct. 19	2	0.69
Oct. 23	6	0.96
1959, Feb. 16	38	0.97
Feb. 18	38	0.96
Apr. 15	35	0.86
Apr. 16	34	0.81.

These figures indicate that during the 5 months of observations there was no appreciable change in the colour of Mars.

Card 2/3

On the Existence of ....

However, these data do not contradict the results of K.I. Kozlova and Yu.V. Glagolevskiy (ATs 201, 1959), who concluded in 1958 that the colour index slightly decreases when opposition is approached. There is 1 table.

ASSOCIATION: Astronomicheskaya observatoriya Leningradskogo universiteta (Astronomical Observatory of Leningrad State University)

SUBMITTED: December, 1959

Card 3/3

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S/034/60/000/212/003/003
E032/E114

9.9861

AUTHOR: Sharonov, V.V.

TITLE: Determination of the Apparent and True Colours of Noctilucent Clouds

PERIODICAL: Astronomicheskiy tsirkulyar, 1960, No.212, pp. 21-22

TEXT: Noctilucent clouds were studied by the visual colorimetry method on July 15 and 16 1959 at the Atmospheric-Optical Station of the Astronomical Observatory of the Leningrad State University at Petrodvortse. The Rozenberg astrophotometer was used in these observations. The apparent colours of three bright details on the cloud system and of the adjacent cloudless sky were measured with the aid of a blue wedge. The results obtained were expressed in terms of the index D which represents the difference between the colour index of the cloud observed through the earth's atmosphere together with the superimposed twilight radiation, and the colour index of extra-atmospheric solar light which was conventionally assumed as the white lights standard. The results obtained are given in the following table.

Card 1/3

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E032/E114

Determination of the Apparent and True Colours of Noctilucent Clouds

Time (legal time of zone III)	Object	Coordinates A (from S to W)	Coordinates h	D	D_o
$1^h\ 00^m$	Bright band	170°	7°.5	-0.32	-1.14
1 20	Bright condensation	179	10.9	-0.34	-0.86
1 54	Bright condensation	180	14.3	-0.42	-1.00

Negative values of D indicate that the apparent colour of these clouds was in fact blueish and the colour saturation increases with the altitude of the cloud above the horizon. The latter is a natural consequence of the selective action of atmospheric extinction. The parameter D_o in the above table represents the difference between the colour index of the cloud corrected for atmospheric extinction and background, and the extra-atmospheric solar light. The results show that the true colour of these clouds

Card 2/3

S/034/60/000/212/003/003
E032/E114

Determination of the Apparent and True Colours of Noctilucent Clouds

is considerably bluer than the apparent colour. It is noted that for rays scattered in accordance with the Rayleigh λ^{-4} law, the value of D_o is -1.25 if it is assumed that the effective wavelengths in the visual and photographic systems are 560 and 420 mμ. If, on the other hand, the wavelengths are taken to be 529 and 425 mμ (Harvard system) then $D_o = -0.95$. It is concluded that the colour of the rays scattered by the noctilucent clouds is close both to Rayleigh scattered rays and the colour of the bright day sky.

ASSOCIATION: Astronomicheskaya observatoriya, Leningradskogo universiteta (Astronomical Observatory, Leningrad University)

SUBMITTED: May 1960

Card 3/3

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(Planets--Observations)

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(VISION)

SHARONOV, Vsevolod Vasil'yevich; MURATOV, R.M., red.; BRUDNO, K.F., tekhn. red.

[Light and color] Svet i tsvet. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961. 311 p. (MIRA 15:2)
(Light) (Color)